Dear Client,

Thank you for Purchasing our YDQ Gas +Type AC Hipot Tester. Please read the manual in detail prior to first use, which will help you operate the equipment skillfully.

Our aim is to continually improve and perfect the company's products, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.

The input/output terminals and the test column may bring voltage, when you plug in/pull out test line or power outlet, they will cause electric spark. PLEASE CAUTION RISK OF ELECTRIC SHOCK! To avoid risk of electric shock, be sure to follow the operating instructions!

Company Address:

- **T4， No. 1, High-tech 2 Road，East Lake High-tech Development Zone， Wuhan**
- Sales Hotline: 86-27- 87492243
- After Service Hotline: 86-27- 87459656
- Fax: 86-27- 87803129
- E-mail: mikexu@hvtest.cc

◆ SERIES COMMITMENT

All products of our company carry one year limited warranty from the date of shipment. If any such product proves defective during this warranty period we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

◆ SAFETY REQUIREMENTS

Please read the following safety precautions carefully to avoid personal injury and to prevent the product or any other attached products being damaged. In order to avoid possible danger, this product can only be used within the scope of the provision.

Only qualified technician can carry out maintenance or repair work.

--**To avoid fire hazard or personal injury**:

Use Proper Power Cord

Only use the power wire supplied by the product or meet the specifications of this product.

Connect and Disconnect Correctly

When the test wire is connected to the charged terminal, please do not connect or disconnect the test wire at will.

Grounding

The product is grounded through the power cord; besides, the ground pole of the shell must be grounded. To prevent electric shock, the grounding conductor must be connected to earth ground.

Before making connections to the input or output terminals of the product, please do check that the product is properly grounded.

Pay Attention to the Ratings of All Terminals

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

Do Not Operate without Covers

Do not operate this product when covers or panels removed.

Use Proper Fuse

Only use the fuse with type and rating specified for the product.

Avoid Touching Bare Wire and Charged Conductor

Do not touch the bare connection points and parts of energized equipment.

Do Not Operate with Suspicious Faults

If you encounter operating faults/suspect there is damage to this product, do not continue. Please contact with our maintenance staff.

Transformer must be grounded before connecting power.

The two handles of transformer must be horizontally placed before connecting power.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in Explosive Atmospheres.

Ensure Product Surfaces Clean and Dry

—Security Terms

Warning: indicates that death or severe personal injury may result if proper precautions are not taken

Caution: indicates that property damage may result if proper precautions are not taken.

Contents

I. Overview

YDQ series SF6 testing transformers are essential equipments during electrical equipments tests and preventive tests. With the development of China's power industry, people required higher about the voltage class of testing transformer, and the traditional oil / dry type test transformer cannot meet the requirement in volume, weight, and functions.

With the development of Chinese basic scientific research, the appliance of new material and new workmanship, the new medium SF6 enter the electrical equipment applications. The SF6 widely used because of its excellent insulating properties and arc performance and incombustible.

SF6 test transformer compared with the traditional oil / dry type test transformer, 20%-60% reduction in weight (depend on the voltage and capacity class), without oil pollution, voltage class can up to 300KV. It is especially suitable for condition of working or moving frequently.

II. Structure

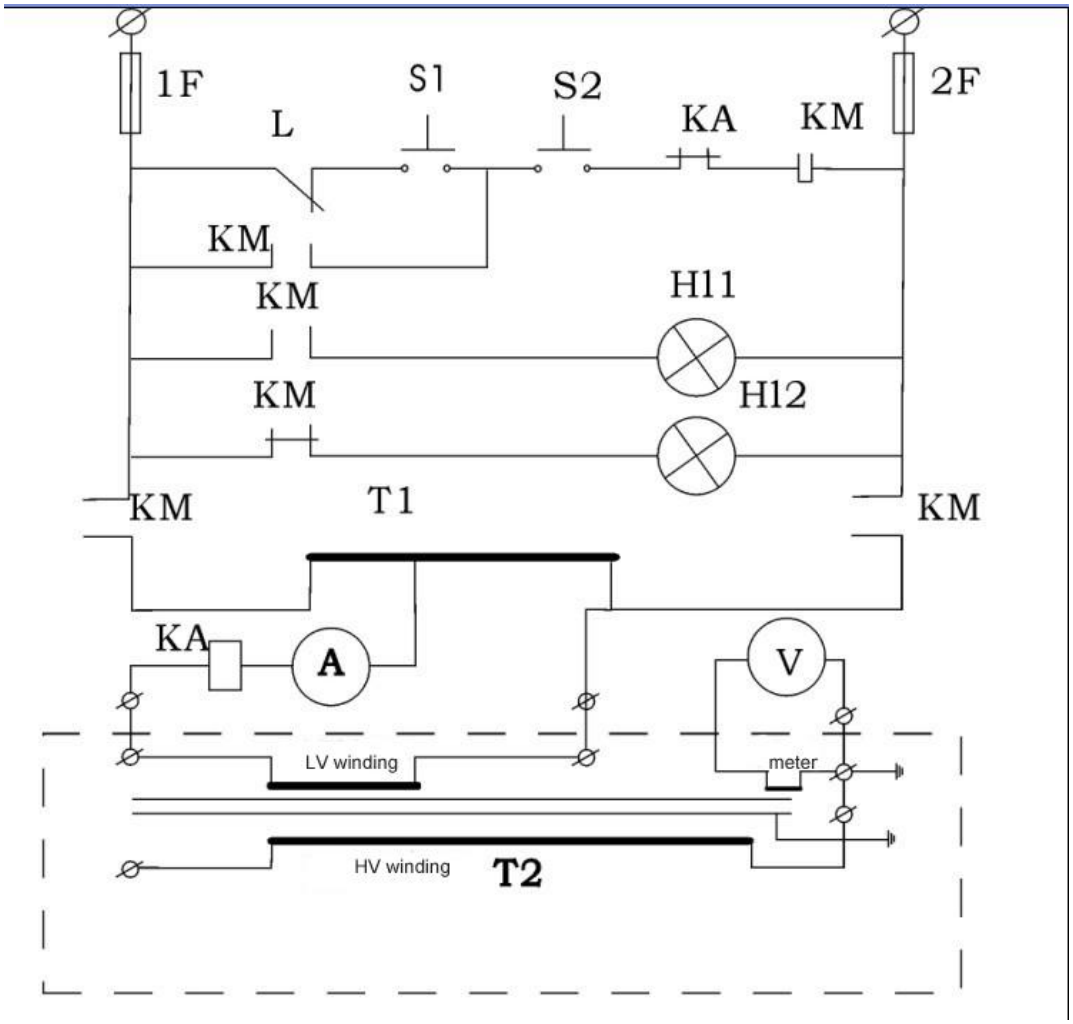
1. YDQ series product small size, light weight.
2. YDQ series product use high quality cold rolled silicon 30Q－130 quartet built a multi-stage cylindrical box -shaped core, the special high-strength insulation tube use QZ wire directly continuously wind to tower coils, filled in SF6 gas.
3. YDQ (Z) series different with YDQ series because its HV tube with HV rectifier stack, insert or pull out the short rod can change YDQ to be DC/AC output.
4. YDQ (Z) series different with YDQ series in structure of the tube.
5.

III. Working principle

Input power to control cabinet which with over-current tripping and zero interlock devices, input to YDQ primary winding through, according to the principle of electromagnetic induction, in accordance with the turns ratio of primary winding and secondary winding to get multiples of the same voltage amplitude - frequency high voltage at the secondary (high voltage) winding side. DC high voltage can be obtained by this high -frequency voltage through high voltage silicon rectifier stack and regulator capacitor filtered, and its high -frequency rms amplitude is 1.41 times of this high-frequency voltage.

IV. Circuit diagram

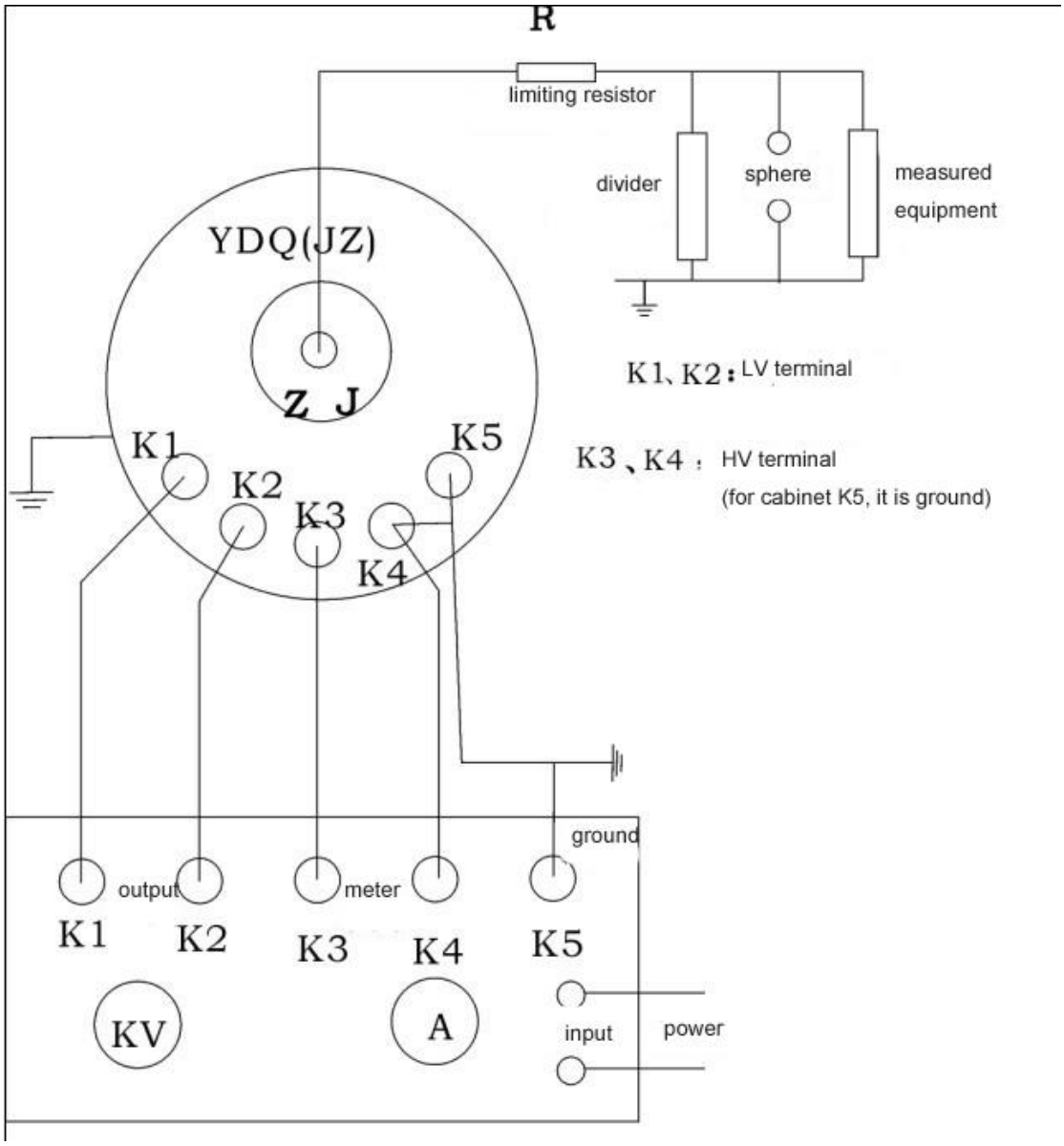
Ordinary console circuit diagram as following:



1-2F: fuse	KM: AC contactor	KA: over-current breaker
L: zero switch	HI1: switch on indicating	A: ammeter
S1: Close switch (button)	H12: Power indicating	V: voltmeter
S2: Open switch (button)	T1: regulator	T2: HV testing transformer

V. Testing site

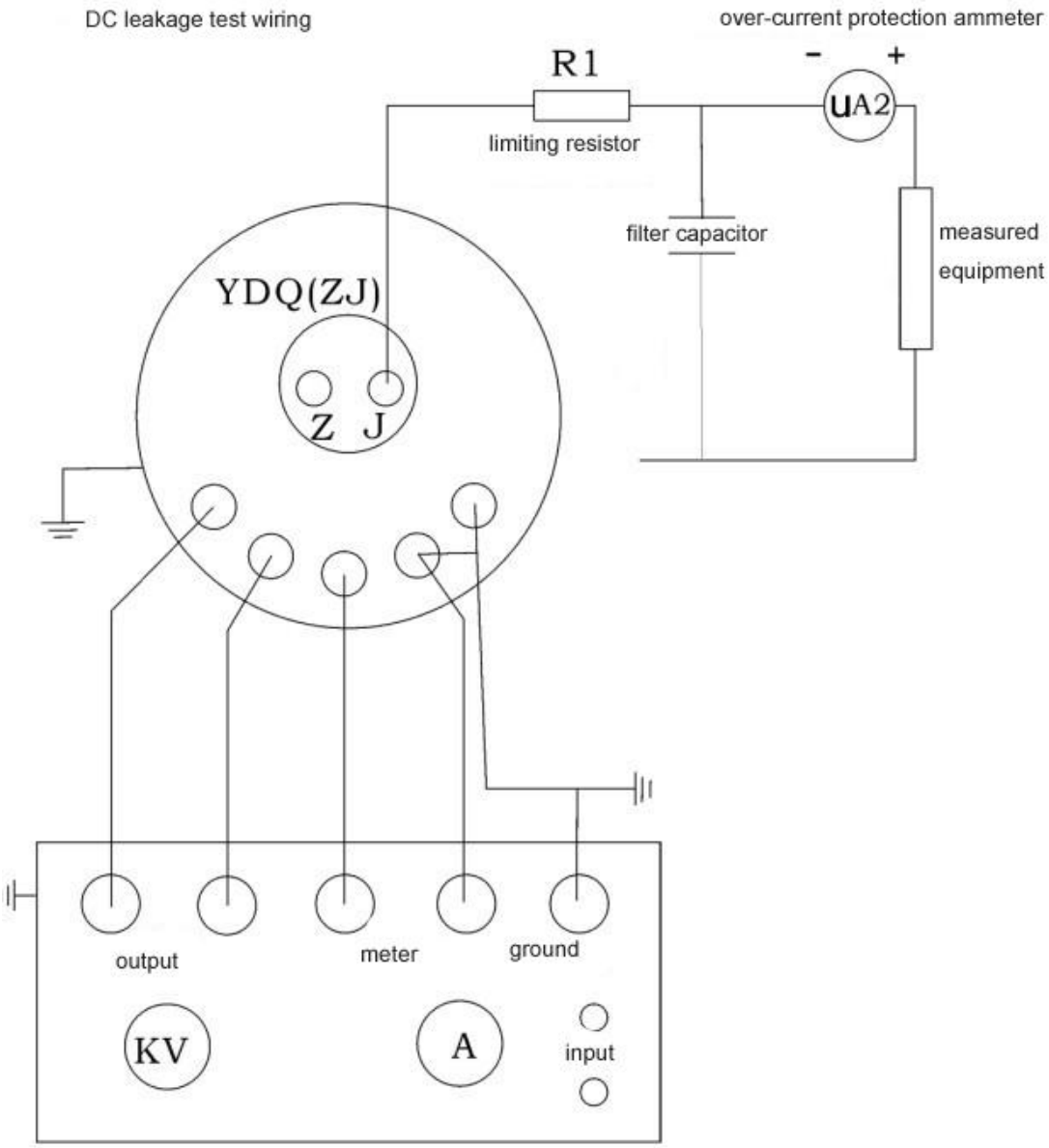
1. AC hipot test wiring



Remark: (1). Control cabinet, limiting resistor, divider, sphere are optional for customers (not included in the standard product).

(2). The products must be well grounded (testing transformer/ control cabinet) to ensure safety of people and instruments.

2. DC leakage test wiring

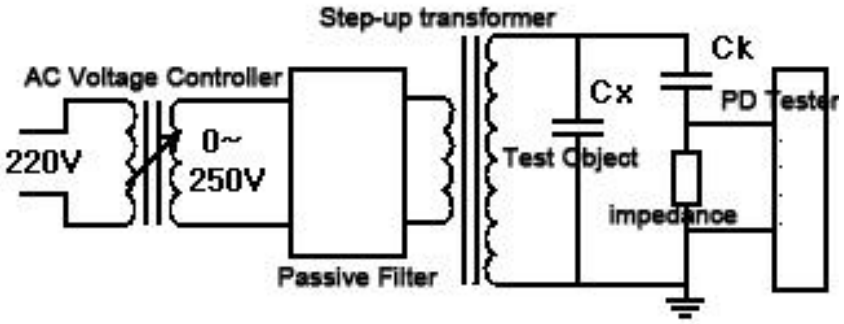


Remark: (1) The products must be well grounded (testing transformer/ control cabinet/HV &meter terminal) to ensure safety of people and instruments.

(2) Micro ammeters positive electrode connects to the measured equipment, negative electrode connects to the resistor.

(3) Please use discharging rod to deal after the test finished, or threat to life.

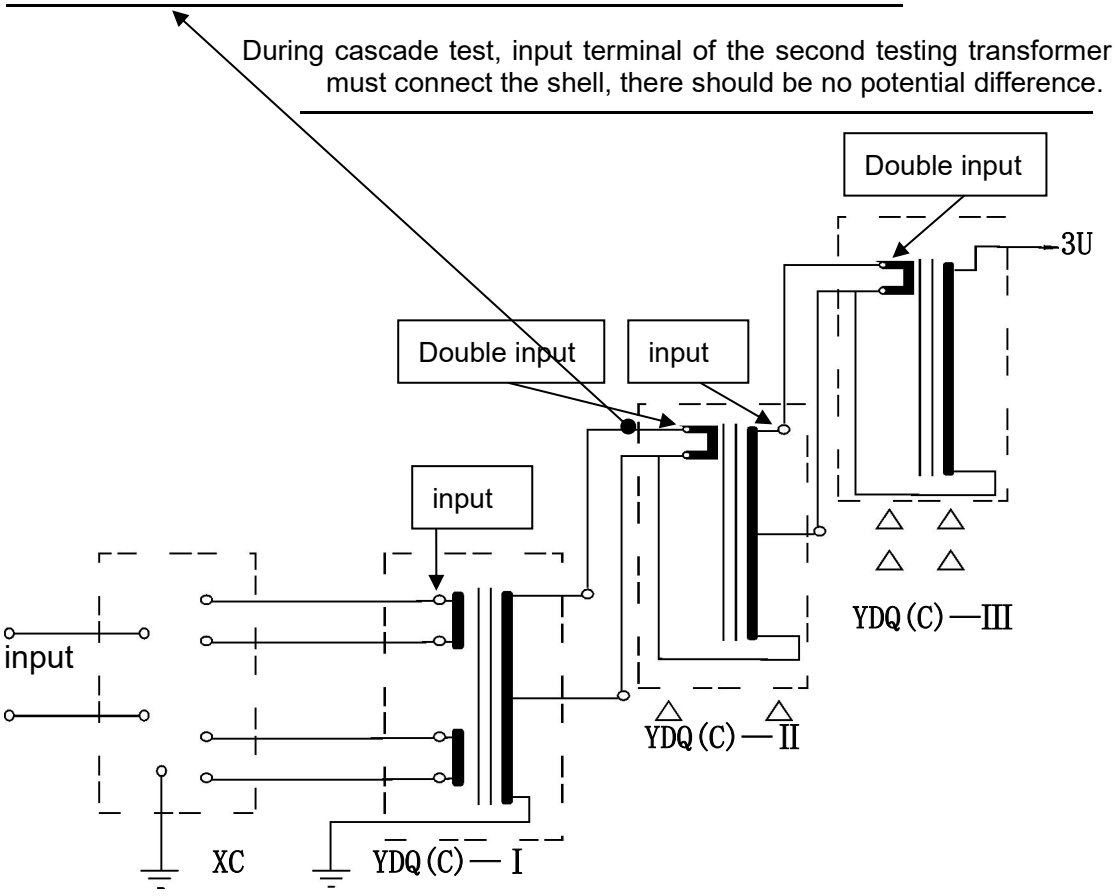
3. Partial discharge test wiring diagram



4. Cascade test wiring

(1)Cascade wiring

During cascade test, input terminal of the second testing transformer must connect the shell, there should be no potential difference.



XC/TC—control cabinet/console

YDQ (Z)—I—The first set of testing transformer

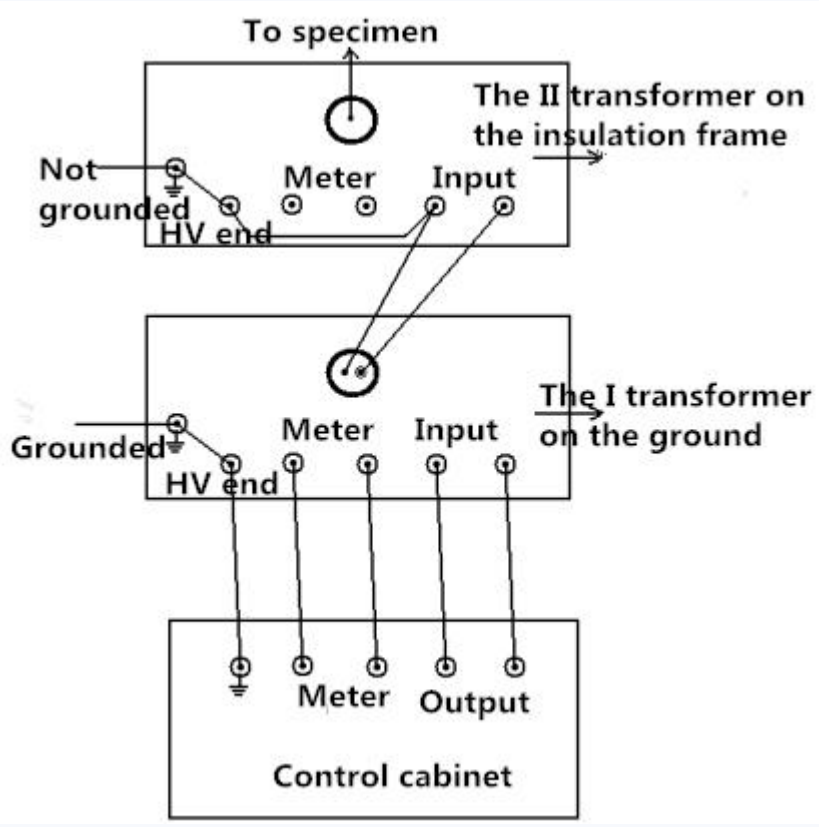
YDQ (Z)—II—The second set of testing transformer

YDQ (Z)—III—The third set of testing transformer

△ —insulated bracket

Note: according the instruction to connect wire, otherwise, the polarity opposite.

(2)Graphic wiring



5. Introduction

In order to facilitate the power system on-site level test, we have designed and produced YDQ (Z) series of test equipment. As decentralized combination easy to use, it can be adapted to various needs of the scene. Each unit, light in weight, easy to transport and move, make on-site tests can successfully achieve a higher power.

6. Working principle

YDQ (Z) series of high voltage test equipment, except the maximum voltage level, others cascade excitation winding group with the high-voltage winding.

This winding is in same parameters with the primary winding of the next grade transformer. The control cabinet supplies power to the Ⅰ testing transformer winding. The end of the Ⅰ testing transformer high voltage winding and chassis grounded, the head end of Ⅰ, the Ⅱ testing transformer high voltage winding and chassis grounded. The String excitation tap of the Ⅰ testing transformer supply excitation power to the LV winding of the Ⅱ testing transformer, this time, the output of the Ⅱ is the sum of output of Ⅰ and Ⅱ. Accordingly, we can get Ⅲ.

VI. Operation

Marked “*” is for DC test.

1. Wiring according previous diagram, check if the internal gas pressure of the gauge is normal (≥0.2MPA)
2. * For AC hipot test, insert short rod into J, for DC hipot test, take out the short rod. (Only for AC& DC hipot test set)
3. Limiting resistor configuration: power frequency hipot each volt 0.3～1Ω; DC each volt 5~10Ω, general test cannot equip this.
4. Disconnect the lead wire of the measured equipment, clean the tube and product, adopts shielding measures if necessary.
5. Preparation and safety measures finished, try the product without connecting the measured equipment.
6. *Connect the measured equipment, DC test need shielding wires to avoid leakage.
7. Turn on the power, the green power indicator of the control cabinet will be on.
8. Press “start” button, the indicator will be on.
9. Add power evenly clockwise to the control cabinet, watching the voltmeter to the rated voltage value. Continuing specified time and look ammeter indication.

10. Continuous pressure of time and attention ammeter provided instructions.
11. Voltage withstands time out, watch KV meter; quickly and evenly reduce to zero.
12. *After the test as shown in picture 2, first discharging use discharge rod, then discharge directly to ground.
13. After the charged part of the HV discharged, change or remove the high-voltage leads, and all leads then one test finished.
14. If the transformer without PD test does PD test, the operation procedure is the same as that of ordinary high voltage test, and the wiring mode of the equipment wiring reference PD instrument instruction is the standard

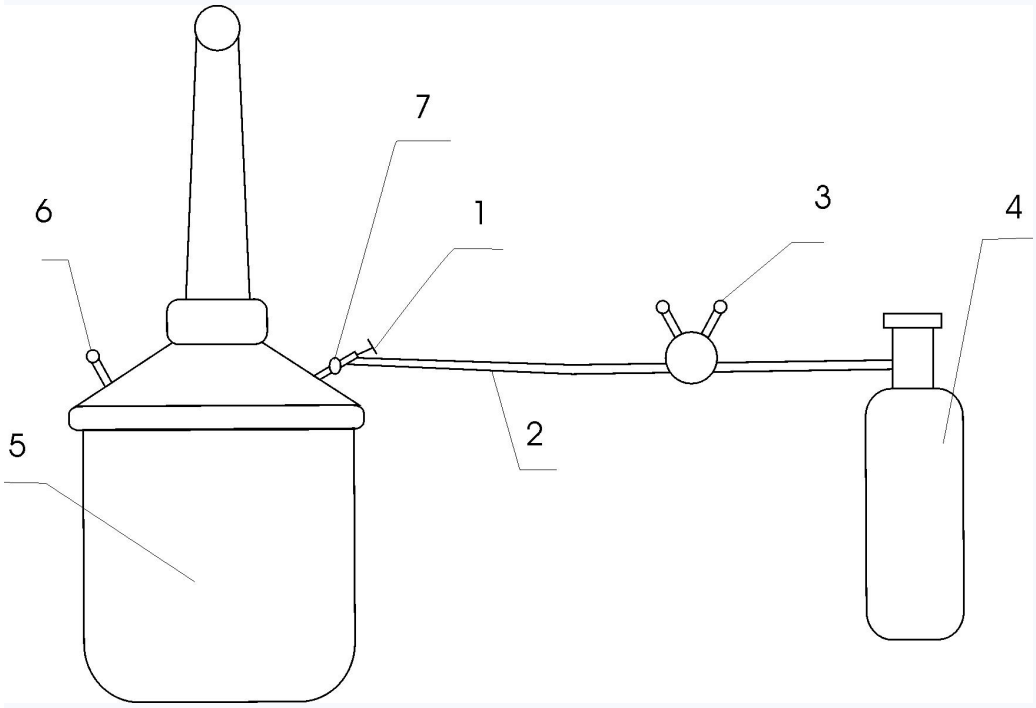
VII. Announcements

1. 1.Should regularly test the transformer to maintain clean before each test to wipe clean nylon cover, and covering with plastic sheeting.
2. In addition to wiring should not be free to twist the bolt outside the pillars, to prevent leakage due to seal damage caused by the phenomenon.
3. Slight leakage is a normal phenomenon, estimated to be about every four years, pressure to reduce 0.05Mpa, factory air pressure in the 0.2 - 0.4Mpa between. With a slight air pressure changes in humidity increase or decrease. When the gas pressure should be promptly reduced to 0.1Mpa qi or disabled.
4. Please use our factory is equipped with special inflatable nozzle and canister sulfur hexafluoride gas, inflation pressure must not exceed 0.4Mpa. Generally 0.2 - 0.3Mpa .
5. Keep enough safe distance for people when fix up the test equipments. Try to avoid to layout of equipment or HV wires at the aisle.
6. Install fence at test site, hanging “stop, HV, danger" nameplate.
7. During the test, HV leads must be with support or lead insulation. Security Matron prevents people near and across the bottom.

8. During DC high voltage tests when micro-ammeter at a high level, shielding box outside with over-current protection device automatically to prevent sudden breakdown of a short circuit or when discharging the meter burned.
9. Frequency voltage withstand test: Please note check if equipment capacity is sufficient, and should avoid resonance.
10. Working ground wire (high voltage end, regulator capacitor end ground wire) and protective ground wire (operation cabinet case) should be separate connected, and have a good grounding performance.
11. If power irregularity swing during the test (e.g. welding) will inevitably affect the stability of the high voltage output, stop testing and find out reasons.
12. The test requirements for climate (temperature, humidity) should be consistent with the requirements of the test procedures and be recorded.

VIII. Maintenance

1. Keep the product clean, wipe clean sleeve and covering with plastic sheeting before each test.
2. Forbidden to unscrew the bolts (except the wiring pillar) to prevent damage caused due to gas leaks.
3. Slight leakage is a normal phenomenon, generally speaking every four years pressure reduces 0.05Mpa, pressure between 0.2-0.5Mpa after manufacture. As the environment humidity changes pressure decrease slightly. When the pressure drops to 0.1Mpa need charge gas.
4. When charging gas, please use our equipped special inflatable nozzle and canister SF6 gas, inflation pressure must not be greater than 0.5Mpa. Generally 0.2-0.3Mpa.
5. Charge method :



1. Inflation valve 2. Oxygen pipeline 3. Oxygen meter 4. SF6 cyclinder

6. Testing transformer 7.transformer inflatable nozzle gauge

(1) Connect pipeline according the picture.

(2) Open the valve of SF6 cylinder, the oxygen meter around 20kg/cm.

(3) Screwing in the screw of oxygen meter, the pressure gradually increased. At this time with gas leakage to exhaust the air in the pipeline.

(4) Immediately opening the valve (clockwise) and hear the air flows into the body of the transformer.

(5) Regulate the screw of the oxygen meter, make the oxygen meter outlet pressure in 5.5Kg/cm.

(6) Monitor the pressure gauge of the transformer, when the pressure reaches 2.5-3Kg/cm (0.25-0.3Mpa), immediately shut the gas valve (counterclockwise). Absolute prohibition of over-pressure to avoid danger.

(7) Close SF6 cylinder valves.

(8) Close the oxygen meter valve, inflation finished.

(9) Remove the pipes and valves.

(10) After charged gas still five minutes to allow the gas mix to work.

Work conditions :

1. Test transformer rated conditions of use should meet the following requirements:

A, ambient temperature: maximum temperature of +40 ℃ Minimum temperature of -20 ℃

B, the maximum relative humidity of air, when the air temperature is 25℃, relative humidity less than 85%.

C, no serious impact on the installation location of the transformer insulating gas, steam, chemical dust, dirt and other explosive media sites.

D, test transformer should be used to gradually increase the input voltage and output should be sufficient protection in series resistance, should not break under high pressure equipment together.

2. The transformer allows the running time:

The rated voltage at rated capacity under continuous operation shall not exceed half an hour, each working time working time interval 5-10 times to ensure adequate heat transformer at rated voltage and rated current of the two-thirds of the working conditions conditions allow long-term continuous operation.

Technical Parameters:

1.The voltage level of the transformer load current 4% ~ 9% impedance voltage

2.XC、TC series of existing specifications and operating time

Type	And supporting YDQZKVA	The Pressure regulator nameplate KVA	Supporting run-time (min)
XC-1.5	1.5	1	≤30
XC-3	3	2	≤30
XC-5	5	3	≤30
TC-10	10	5or10	≤30
TC-20	20	10or15	≤30
TC-30	30	30	≤30
TC-50	50	50	≤30

Isolation filter

The main structure is isolation transformer and off-wave device. The connection is located between the console and the test transformer, which can effectively eliminate the clutter and all kinds of interference in the power supply.

Input voltage: 220V + 10% output voltage: 220V + 10%

Rated capacity: 5KVA no load loss less than 5%

Impedance voltage less than 5% weight: 25Kg

Attenuation effect: 10KHZ-100KHZ > 20dB

100KHZ-30MKZ > 60dB

Outline size: long 300mm* width 300mm* high 350mm

IX. Service conditions

1. Rated conditions requirements of SF6 AC testing transformer:

A. Ambient temperature : maximum: +40 ℃ minimum:-20 ℃

B. Maximum relative humidity, when the air temperature is 25 ℃, relative humidity less than 85%.

C. Installation site without seriously affecting the transformer insulating gas, steam, chemical dust, dirt and other explosive media.

D. AC test transformer the input voltage gradually increases and the output should be with sufficient protection resistor in series, should open/close under high voltage.

2. Allowed running time

Under rated voltage of rated capacity, continuous operation shall not exceed half an hour, every interval time is 5-10 times of working time, in order to ensure adequate cooling of the transformer, under rated voltage and two-thirds of the rated current allows long-term continuous operation.